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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/616,288

07/10/2003

Taro Yokoyama

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EXAMINER

TUCKER, WESLEY J

ART UNIT

PAPER NUMBER

2624

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/616,288	Applicant(s) YOKOYAMA, TARO	
	Examiner Wes Tucker	Art Unit 2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 June 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 8-11 is/are rejected.
- 7) ☒ Claim(s) 5-7 and 12-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's amendment filed June 19<sup>th</sup> 2007 has been entered and made of record.
2. Applicant has amended claim 3. Claims 1-14 remain pending.
3. Applicant's arguments in view of the presented references have been fully considered, but are not persuasive for at least the following reasons:

Applicant argues primarily that the reference to Harakawa, does not teach the determination and use of a main axis of the hand. Examiner disagrees. As Applicant notes in the remarks, Harakawa clearly teaches using the tip of a person's hand in conjunction with another reference point such as a shoulder or chest portion to determine the direction the person is pointing. Applicant argues that the distinction between Harakawa and the present invention is the use of a main axis of the hand. However Harakawa uses the tip of the hand with a generally fixed point to determine an axis along which the person is pointing. Harakawa teaches that the fingertip or the like is generally merely moved along a virtual spherical surface centered and the vicinity of the shoulder joint (column 10, lines 30-46). Therefore the vector in 3D space being used here is the radius from the shoulder or chosen reference point and the tip of the hand. This radius is interpreted as the main axis of the hand, as it is used to measure movement and direction of the fingertip and the direction the in which the person is pointing. The determination of an axis of the hand or general pointing direction is

necessary in determining the pointing direction. Harakawa further teaches that the feature point (hand tip) can be moved and the pointing direction is adjusted according to the movement with respect to the reference point (shoulder or chest or head as taught by Liu). This adjustment also accounts for when the arm is bent which is considered to maintain the main axis of the hand. The rejection in view of Harakawa and Liu is therefore maintained and made FINAL.

***Allowable Subject Matter***

4. Claims 5, 6, 7, 12, 13, and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harakawa et al. (USPN 6,385,331) in view of Liu (USPN 6,553,281)

**Regarding independent claim 1:**

Harakawa discloses a pointing position detection device which detects the presence of a human being from an image which is photographed by a plurality of cameras, and which detects a position at which the human being is pointing [Harakawa col. 9 lines 58-61] comprising:

- a section which detects a hand position of the human being, including at least distance information, based upon the image [Harakawa col. 10, lines 1-3].
- a section which calculates a position of a hand tip and a main axis of the hand, based upon the hand position which has been detected [Harakawa col. 11 line 21: The reference describes locating the tip of the hand. The reference later describes that this locating process involves determining 3-D coordinates of the hand tip (see col. 20 lines 54-56).
- a section which detects a direction in which the human being is pointing, based upon the head position which has been detected and the position of the hand tip and the main axis of the hand which have been calculated wherein the position at which the human being is pointing is detected, based upon the detected direction in which the human being is pointing [Harakawa col. 11 lines 24-27 and lines 38-45: The reference describes detecting the direction of the pointing based on a feature point and a reference point. The reference point here is not a head, as is required by the claim, but is rather another body part such as a shoulder or joint. However, it would have been obvious to use the head as a reference point. This will be discussed next.].

Regarding the limitation of detecting somebody's head and then using that head to help determine the direction and position in which a human being is point, Harakawa does not expressly disclose using a head, but rather discloses using another reference point, such as the chest or a shoulder joint. Liu, on the other hand, in the same field of endeavor of detecting of humans through imaging, discloses using the head (specifically, the eye, which is part of the head) as a reference point (see Liu col. 3 lines 40-60). It would have been obvious to one reasonably skilled in the art at the time of the invention to modify the Harakawa by using the head as a reference point as taught by Liu. Such a modification would have allowed for the reference point to be more easily determined, given that the head contains more discernable and therefore easily identifiable features than does a should joint.

Regarding claim 2, it has already been discussed that Liu's use of a head as a reference point is the use of the eye.

Regarding claim 3, in the combination of Harakawa and Liu, Harakawa teaches searching for feature points in proximity to other feature points (column 7, line 45- column 8, line 30). Examples of these points are taught by Harakawa to be shoulder, chest and hand points. Combined with the teachings of Liu, it would have been obvious to one of ordinary skill in the art to apply the same relationships to a detected head region.

Regarding claim 4, it is unclear to the examiner how this claim adds any further limitations to the claim from which it depends. This claim recites that the main axis of the hand is detected "based upon a distribution of picture element data." But any detection of an object in an image would necessarily encompass the broad terminology of a "distribution of picture element data." Thus, the combination of Harakawa and Liu read on this limitation.

6. Claims 8-11 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Harakawa and Liu as applied above, and further in view of well known prior art.

These claims simply add that limitations previously discussed are embodied on an autonomous robot. It is well known in the image processing art to use robots for image detection purposes (Official Notice). It would have been obvious to embody the Harakawa and Liu disclosures on a well-known robot in order to make for a completely automated device.

***Final Rejection***

7. Applicant's amendment necessitated the grounds of rejection presented in the Office Action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 571-272-7427. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Wes Tucker

7-17-07



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